A2 Cont'd

cell module and increase an output. The solar cell module can be used as a practical energy source.

Page 1, line 16:

A3

Because solar light is unexhausted energy, a solar cell device for directly converting light energy into electrical energy has been developed as energy source for substituting with environmentally harmful fossil fuel such as petroleum and coal. A plurality of solar cell elements are electrically connected in series or in parallel with each other to form a solar cell module and increase their output. The solar cell module can be used as a practical energy source.

Page 2, line 14:

A4

The solar cell element 110 is so structured that n-type impurities are diffused on a p-type single crystalline silicon substrate 110a to form an n-type semiconductor layer 110b so that a semiconductor junction is formed. The rear surface electrode 110d of aluminum (Al) is formed on a rear surface side of the substrate 110a. The aluminum of the rear surface electrode 110d is diffused and a p+-type diffusion layer 110c is formed on the rear surface side of the substrate 110a. A comb-shaped electrode 110e of silver (Ag) is formed on a front surface side of the substrate and a silicon dioxide (SiO_2) layer as a reflection preventing layer 110f is formed.

Page 2, line 22:

A5

A conventional solar cell module has a structure with a semiconductor junction arranged on a light incidence side of a front surface glass on as shown in Fig. 4 so that many carriers are generated on the light incidence side and a strong electric field on the junction separates the carriers.

Page 3, line 1:

A6

A solar cell element capable of receiving light from both the front and the rear surfaces with a structure that the electrode provides on the front and rear surface side and is formed of a transparent material that facilitates the utilization of light.

Page 3, lines 8-9:

A7

In the meantime, a solar cell module should be weather proof in order to withstand long-term use in outside. When a lamination film such as the rear surface member 101 in which the metal foil is sandwiched with plastic films, water entrance from outside is suppressed and high power generation performance can be obtained for a long period of time.

Page 3, line 13:

A8

The above solar cell element of the two-side incidence type uses a rear surface member formed of transparent material. However, when a transparent resin film is used as the rear surface member, water is likely to enter as compared with a lamination film with a metal foil sandwiched with plastic films.

Page 4, line 5:

A9

A solar cell module of this invention comprises a front surface side light transmitting member containing at least sodium, a rear surface member, and a solar cell element sealed with sealing resin between the front surface side light transmitting member and the rear surface member. The solar cell element has a semiconductor junction positioned on an opposite side of the front surface side light transmitting member.

Page 4, lines 18 & 21:

A10

With the above structure, the alkaline component such as the sodium ions are shielded by a thick bulk semiconductor, and effects to a junction part which are important in forming an electric filed can be substantially eliminated. Therefore, degradation of power generation performance of the solar cell element 3 can be substantially eliminated. As a result, a highly reliable solar cell module capable of withstanding long-term use outside can be provided.

Page 6, line 10:

A11

A quantity of sodium in 1g of the resin for sealing the solar cells of the solar cell module using the lamination film is 0.3μg/g, and that of the solar cell module using only the

A11 Cont'd PVF film is 3μg/g. The quantity of sodium relates to changes in the rate of output, and as the quantity of sodium in the resin increases, the power generation performance degrades.

Page 7, line 14:

A12 This invention was made to improve reliability by not having alkaline composition such as the sodium deposited from the front surface glass affect the semiconductor junction of a solar cell element.

Page 7, line 25 - Page 8, line 3:

A13 The solar cell module according to the embodiment of this invention generates power at both front and rear surfaces, and has a structure that, as shown in Fig. 1, a plurality of solar cell elements 3 is sealed with transparent and insulative resin 4 such as EVA (ethylene vinyl acetate) between a front surface glass 1 and a rear surface member 2. The rear surface member 2 is a transparent plastic film of PVF or the like so that light can enter from the rear surface. In Fig. 1, a single unit of the solar cell element 3 is shown. The solar cell elements are connected with each other in series or in parallel by a connection lead such as a copper foil.

Page 9, line 8:

A14 The solar cell elements are sandwiched with an EVA resin sheet 4 so as to locate semiconductor junction of the solar cell element 3 between the front surface glass 1 and the rear surface member 2 on an opposite side of the front surface glass 1 and is heated under a reduced pressure so that the module is integrally formed.

Page 9, lines 22-23:

A15 As shown in Fig. 1, the plurality of the solar cell elements 3 are sealed with the EVA resin 4 between the front surface glass 1 and the rear surface member 2, where the semiconductor junction is positioned on an opposite side of the front surface glass 1.

Page 10, line 21:

A16 The sample of the invention includes a transparent plastic film of PVF (polyvinyl

A16, cont'd

fluoride) so as to enter light from the rear surface. The conventional example includes a lamination film of a metal (Al) foil as the rear surface member sandwiched with plastic films of PVF. The conventional example and the sample of the invention have the same structure except that the material of the rear surface member is different, and the semiconductor junction is positioned on a side of the glass substrate or on an opposite side of the glass substrate.

Page 11, lines 12-15:

A17

Explanation on the second embodiment of the invention is made by referring to Fig. 2. As shown in Fig. 2, this embodiment uses the solar cell element 5 capable of entering light from both front and rear surfaces and having a structure [(an HIT structure)] (a High Throughput) which a substantially intrinsic amorphous silicon is sandwiched between the single crystalline silicon substrate and the amorphous silicon layer so that defects on the interface are reduced and characteristics of the hetero junction interface are improved.

Page 11, line 20 to Page 12, line 11:

Sub B1

A18

As shown in Fig. 2, the solar cell element 1 includes an n-type single crystalline silicon substrate 51, an intrinsic amorphous silicon layer 52, and a p-type amorphous silicon layer 53 formed in this order. A transparent electrode 54 on a light receiving side formed of ITO or the like is formed on an entire surface of the p-type amorphous silicon layer 53, and a comb-shaped collector 55 of silver (Ag) or the like is formed on the transparent electrode 54 on a light receiving side. An opposite surface of the substrate 51 has a BSF (Back Surface Field) structure which introduces an internal electric field on the rear surface of the substrate; a high dope n-type amorphous silicon layer 57 is formed with an intrinsic amorphous silicon layer 56 interposed on an opposite surface side of the substrate 51. A transparent electrode 58 on a rear surface side of ITO (Iridium Tin Oxide) or the like is formed on an entire surface of the high dope n-type amorphous silicon layer 57, and a comb-shaped collector 59 of silver (Ag) or the like is formed thereon. The rear surface also has a BSF structure which the intrinsic amorphous silicon layer is sandwiched between the crystalline silicon substrate and the high dope amorphous silicon layer in order to reduce defective on the interface and improve characteristics of the hetero junction